MAG Park-and-Ride Study

EXECUTIVE SUMMARY

January 2001

MARICOPA ASSOCIATION of GOVERNMENTS

MAG Park-and-Ride Site Selection Study

(www.mag.maricopa.gov)

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In January 2000, the Maricopa Association of Governments (MAG) embarked on the *MAG Park-and-Ride Site Selection Study* to identify a regional system of park-and-ride lots to support the regional express bus system, carpooling, and vanpooling. The recommended system includes ten sites for near-term development (in the next five year program) and ten sites for long-term development. Additional recommendations address design guidelines and criteria for lot development, a management and operations plan for the lots, and programming and implementation strategies. This document provides summary information about the various project elements. Copies of the full report are or will be made available to the extent practical given large file sizes on the MAG website (currently www.mag.maricopa.gov), and are also available for a nominal cost that covers copying from MAG in paper or CD-ROM form. The lots recommended for implementation in this report represent the first major implementation of the regional park-and-ride lot system; other lots may be added to the system in the future.

Literature Review and Other Research

This report documents the characteristics of successful park-and-ride lots; current and proposed facilities and services in the Maricopa region (freeways, High Occupancy Vehicle lanes, park-and-ride lots and express bus service); and discusses estimation methodologies for park-and-ride lot demand.

Selection and Design Criteria

This report presents guidelines and generic standards for the design of park-and-ride facilities in the region, including: design characteristics, basic dimensions, design criteria and accepted standards.

Target Area Evaluation

This report presents criteria for the selection of target areas for inclusion in the Plan and the results of the evaluation of 32 potential target areas against the criteria. As a result of the evaluation, a recommendation was made to short-list 19 target areas for site-specific analysis.

Site Evaluations

This report presents the criteria for evaluating and ranking potential sites within each of the target areas for park-and-ride lot use; detailed information on the evaluation of two to six sites within each target area; and recommendations for specific sites for budgeting and programming purposes.

Management and Operations Plan

This report documents experience in the western United States with maintenance costs for existing park-and-ride lots; cost assumptions for use in budgeting purposes; and contractual agreements concerning park-and-ride lot ownership options and operations/maintenance responsibilities.

Programming

This report includes capital cost estimates and potential sources of funds for near-term park-and-ride lot development by year for use in the regional transportation programming process.

Final Report

The Final Report provides complete documentation of all project activities. It includes an Executive Summary highlighting the recommendations and the results of the major project tasks; documentation of the planning and public involvement process; and copies of all of the project reports.

Project Overview

The Maricopa region is one of the fastest growing major urban areas in the United States, with desert land being converted into urban, suburban and exurban developments at a rapid rate. Freeway construction is occurring at a pace unheard of elsewhere in the country to complete the regional freeway program started in 1986. Public transit services have improved over the past several years with the implementation of an added level of transit service (with a peak hour orientation) by local bus operators referred collectively to as "Valley Metro." Yet the percentage of work trips taken by transit is less than two percent, the lowest of any major metropolitan area in the United States.

The development of a regional express bus network, integrated with a network of park-and-ride lots, has been a component of regional transportation plans for a number of years. In 1994, the Maricopa Association of Governments (MAG) Regional Council approved the *High Occupancy Vehicle Facilities, Policy Guidelines and Plan for the MAG Freeway Program*. This Plan included a network of High Occupancy Vehicle (HOV) lanes, HOV access ramps, and 30 park-and-ride lots.

The *MAG Long Range Transportation Plan Summary and 2000 Update* incorporates park-and-ride lots as part of a revised express bus plan. This plan provides for express bus service on HOV lanes between outlying areas and central employment centers and includes a system of park-and-ride lots near freeways. Several other studies and plans by the Arizona Department of Transportation (ADOT), MAG, Regional Public Transportation Authority (RPTA) and the City of Phoenix also have cited park-and-ride lots as critical elements in improving public transit service in the Phoenix region.

At this time, however, the region has only three publicly owned and operated park-and-ride lots in place (Dreamy Draw, at SR 51 and Shea Boulevard; 79th Avenue at I-10; and Deer Valley at I-17 and Bell Road). The region has three additional leased lots, and approximately 60 other joint use lots for which informal agreements have been established with private property owners for shared parking arrangements.

Increases in funding for highways and transit, available through the federal Transportation Equity Act for the 21st Century (TEA-21), provide additional funding to allow the region to complete the construction of a number of major new freeway segments (including HOV facilities) by 2007.

In January, 2000, MAG embarked on this park-and-ride lot site selection study to identify a regional system of park-and-ride lots to support carpooling, van-pooling and the regional express bus system. The specific objectives of the study were: (1) to identify ten sites for near-term development of park-and-ride lots; and (2) to identify ten sites for long-term lots along new freeways in order to preserve right-of-way for their future development. In addition to the identification of specific sites for near-term and long-term development, this project included development of a management and operations plan for the system of park-and-ride lots, and priority programming and implementation strategies for the recommended sites.

Problem Statement and Project Objectives

Current and projected conditions in the Maricopa area have made it clear that the region needs to proceed with the implementation of expanded public transit services, supported by a regional system of park-and-ride lots for transit patrons, carpoolers and vanpoolers. Specific problems that have led to the need for this project include:

- Increasing congestion on freeways and arterials, resulting in increased travel times and pressure on local and regional arterials to serve increasing traffic;
- Air quality concerns across the region;
- Low transit/HOV use (around two percent of total trips), resulting in increasing pressure on the region's roadways, and low productivity for public transit services;
- Rapid regional growth in low density development patterns, resulting in inefficient travel patterns and overall increases in regional VMT (vehicle miles traveled); and
- Rapid development of land throughout the region, resulting in the potential loss of good park-and-ride sites.

While there are significant problems that need to be addressed, there are opportunities that make this a particularly good time to proceed with the park-and-ride lot development program, including:

- On-going expansion of regional public transit services through the passage of the light rail and bus rapid transit by Phoenix and transit initiatives of other local jurisdictions;
- The current effort to complete the regional freeway and HOV system, which will provide facilities for operation of competitive public transit services;
- Increasing traffic congestion and travel times, which improves the relative attractiveness of HOV travel modes to commuters; and
- Increased funding available through TEA-21, which enables completion of the freeway/HOV program, and substantial funding opportunities for implementation of the park-and-ride lot program.

Several communities in the western United States have developed successful park-and-ride lot programs, including Seattle, Portland, Denver and Houston. These communities were contacted to obtain information about their programs, including: size, utilization, access, and service characteristics of existing park-and-ride facilities. In addition, information on their siting and development processes was obtained, along with information about the characteristics of successful park-and-ride lots. This information was supplemented with a literature review and other research regarding park-and-ride lot siting, development and operation. More detailed information on this research is included in the *Task 2 Report: Literature Review and Other Research.*

Characteristics of Successful Park-and-Ride Lots

(Source: Task 2 Report: Literature Review and Other Research)

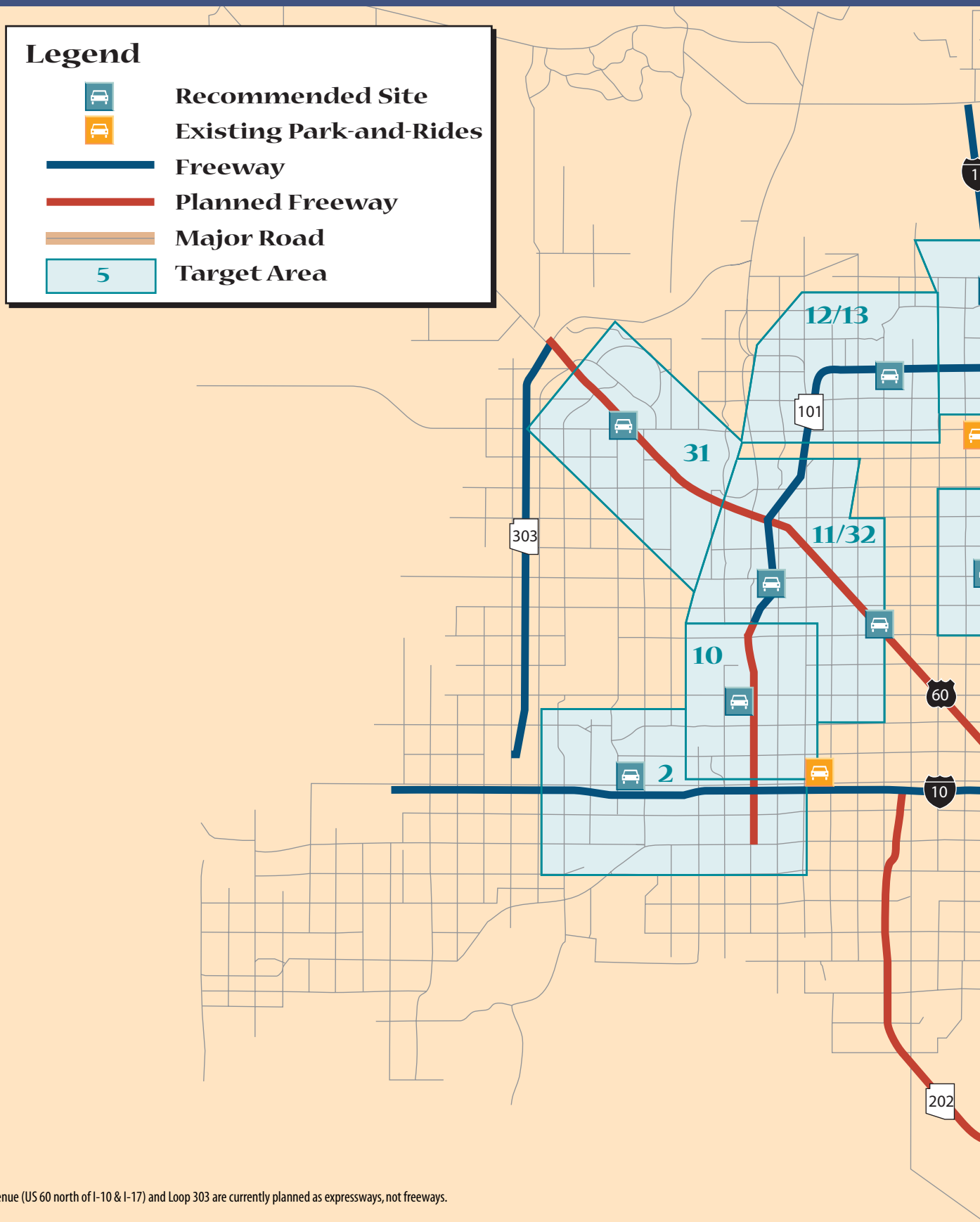
- High level of express bus service (service every 15 minutes or less during peak periods);
- Location within close proximity of a freeway or light rail line (1 mile or less);
- Access to HOV lanes for at least a portion of the bus trip to the final destination;
- Express transit service available over at least a three hour period in morning and evening peak periods;
- Visible from adjacent arterials (to facilitate marketing and patron safety); and
- Parking costs at the destination(s) served by lot are substantially higher than the round trip bus fare.

The Planning Process

The MAG Park-and-Ride Lot Site Selection Study was conducted between January and December 2000. The active involvement of local agency staff was critical to the success of this multi-jurisdictional project. Representatives of local, regional and state agencies participated in a series of meetings held for the project. All MAG member agencies were invited to participate. Participants included staff from ADOT, MAG, Maricopa County, RPTA, and the Cities of Avondale, Chandler, Glendale, Gilbert, Goodyear, Mesa, Peoria, Phoenix, Scottsdale, Surprise, Tempe, and Tolleson. Forums were held over the course of the project to guide and review the technical work done for the project. Additional information on the planning process is included in the *Final Report*, along with information about the dates and agendas for the inter-agency meetings.The draft final report was approved by the MAG Regional Council in January 2001.

Summary of Project Tasks

Task	Major Activities
1. Adjust Scope of Work	• Kick Off meeting of Technical Forum • Partnering Session to address advanced right-of-way acquisition • Schedule revisions to respond to Forum needs
2. Literature Review and Documentation of Existing Conditions *Task 2 Report: Literature Review and Other Research*	• Documentation of demand estimating methodologies • Documentation of local/national park-and-ride lot users • Documentation of characteristics of successful park-and-ride lots • Documentation of traffic and socioeconomic conditions for 1999 and 2020 • Documentation of existing/planned transportation facilities • Preparation of preliminary NEPA (National Environmental Policy Act) Purpose and Need Statement
3. Selection and Design Criteria *Task 3 Report: Selection and Design Criteria*	• Development of standards and criteria to evaluate target areas and potential sites • Development of generic park-and-ride design criteria or standards • Development of methodology for cost estimating and benefit/cost analysis
4. Identify Target Areas *Task 4 Report: Target Area Evaluation*	• Identification of 32 potential interchanges or target areas for lots • Field reconnaissance and analysis of potential target areas • Preparation of explicit park-and-ride demand forecasting model and demand estimates • Modification of preliminary Purpose and Need Statement
5. Near-term Site Identification *Task 5/6 Report Site Evaluations*	• Identification of 3-5 potential sites within each selected target area • Collection of aerials and other necessary data for all potential sites • Field reconnaissance and analysis of all potential sites • Identification of recommended site within each target area
6. Long term Site Identification *Task 5/6 Report: Site Evaluation*	• Identification of 3-5 potential sites within each selected target area • Collection of aerials and other necessary data for all potential sites • Field reconnaissance and analysis of all potential sites • Identification of recommended site within each target area
7. Management and Operations Plan *Task 7 Report: Management and Operations Plan*	• Development of local cost factors for development and operations and maintenance • Documentation of ownership options • Development of sample legal agreements for different options for use by local jurisdictions • Preparation of cost estimating spreadsheet model/worksheet for use by local jurisdictions
8. Programming *Task 8 Report: Programming*	• Document current and projected financial conditions for program implementation • Develop financial program for development of near-term lots for inclusion in five year program
9. Agency and Public Involvement and Final Report *Task 9 Report: Final Report*	• Establishment and facilitation of regional review group • Coordination with MAG member agencies, Transportation Review Committee, Management Committee, governmental representatives and the Regional Council • Presentations to Agency Committees • Preparation of Final Report and Executive Summary of Final Report



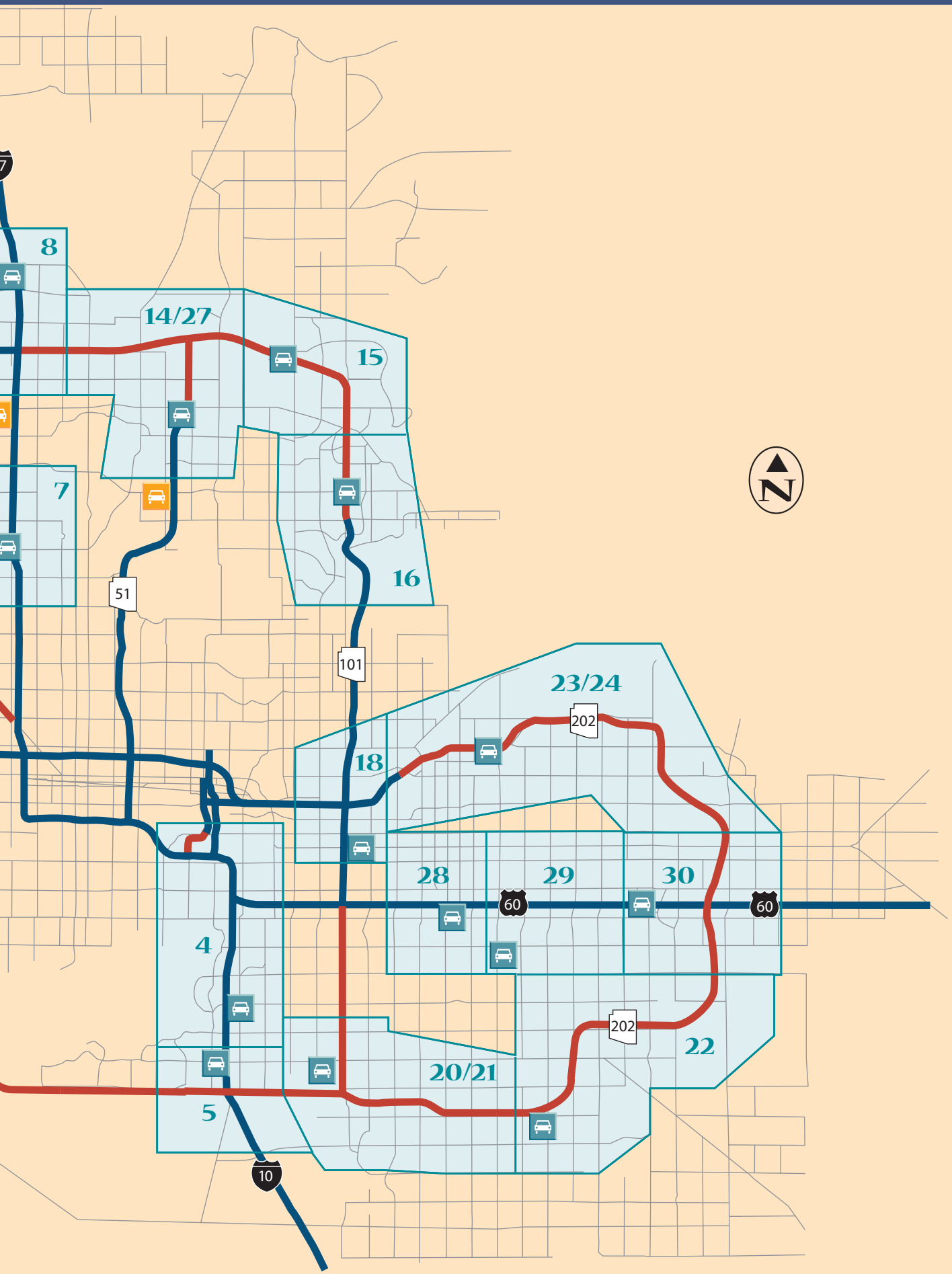
Footnotes:

• Grand Avenue (US 60 north of I-10 & I-17) and Loop 303 are currently planned as expressways, not freeways.

• Funding for sections of the South Mountain facility (Loop 202) remains to be identified.

• Additional lots may be added to the regional system in the future as needs are identified and funding becomes available.

• Exact lot locations may change following the consideration of alternative sites in the detailed environmental analysis required for each lot. The final location for each lot should, however, be within the same target area that contained the original recommended lot.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Site Evaluation Process

The identification of the recommended park-and-ride sites was conducted in two stages. The first stage involved the identification of "target areas" (generally five by six miles) for potential lots located along freeway corridors. The second stage involved the evaluation of specific sites within each target area, and the recommendation of a preferred site within each target area. Criteria were developed to identify the target areas and to evaluate and prioritize the recommended target areas for near-term and long-term park-and-ride lot development. Each key step was reviewed at an agency forum.

In this process, thirty-two target areas were analyzed, covering much of the existing and planned freeway network serving the greater Phoenix area. Nineteen target areas were short-listed to be carried forward for site identification and analysis. The areas were ranked for near- and long-term implementation. Within each target area, three to five sites were evaluated and ranked. The criteria used for the target area and site evaluations are described in the table below. Measures were developed to assign ratings of +, 0, or – for each criterion. A map presenting the recommended target areas and sites is included at the end of this summary.

Criteria for Target Area and Site Evaluation

Criteria	Used for Target Area Evaluation	Used for Site Evaluation
Spacing – The target area's ability, when combined with the existing park-and-ride lots, to constitute a system of public park-and ride lots serving the entire regional freeway system. The "system" component included both geographic and ridership issues. Target areas to be served by existing or programmed freeways were more likely to be near-term locations; while locations to be served by planned freeways were likely to be included for long-term implementation.	●	
Available Land/Capacity and Potential for Expansion – The site's ability to meet the size and dimension requirements for park and-ride lots to meet current and projected demand for the target area. Sites on vacant and/or underdeveloped property (especially land in public ownership) were rated higher than sites on private and/or developed parcels.	●	●
Land Use Compatibility/Regulatory Issues – Compatibility of surrounding land uses with a park-and-ride lot, based on existing development, zoning and comprehensive plan designations for the potential site and surrounding area. Special permitting needs (federal, state, and local) were noted.		●
Opportunities for Joint Use – Potential for joint use opportunities for the site. Sites with joint development opportunities that were considered to be low risk, cost-effective, likely to proceed and a significant benefit to the potential park-and-ride facility received higher ratings.		●
Visibility of Lot from the Road (Marketing and Security) – How visible the lot would be from the nearest arterial and freeway, to assess the attractiveness of the location from a marketing standpoint, as well as safety in terms of personal safety and vehicle security. Sites with clear visibility from adjacent arterials received the highest rating.		●
Availability of Express Bus Service – Quality of express bus service to the site (existing or proposed service); local bus service improved the rating. The number of major destinations served directly, or by a single convenient connection was considered, along with the availability of midday and evening service, and the span and frequency of transit service. Lack of express bus service between the site and a regional destination eliminated the site.	●	●
Security – Security of the site for personal safety and for vehicle security. Sites with high visibility from adjacent businesses received higher ratings than sites that were more remote or less visible.		●

Criteria for Target Area and Site Evaluation (continued)

Evaluation	Used for Target Area Evaluation	Used for Site Criteria Evaluation
Vehicular Access – Ease of access to/from the site for personal vehicles and transit vehicles. Sites with good access to arterials/freeways were rated higher.		●
Non-Motorized Access – Ease of access to/from the site for bicycle and pedestrian users. Sites with direct links for pedestrians and bicyclists to adjacent neighborhoods received the highest ratings.		●
Potential Design Constraints – Ease and cost of design, based on site dimensions, topographic considerations, and other relevant factors. Sites without major design constraints were rated higher than sites with constraints that would increase the cost of site development.		●
Environmental Considerations – Presence of potential major environmental issues, including transportation, air quality hot spots, sensitive noise receptors, water quality, Title VI and environmental justice. Sites without environmental issues were rated higher than sites with major environmental issues.		●
Freeway Proximity – Distance between the site and the nearest freeway interchange. Sites located within 1/4 mile of the nearest freeway on-ramp received the highest rating, while sites located more than a mile from the nearest freeway ramp received negative ratings.		●
Location Relative to Congestion on Freeway – Location of site "upstream" or "downstream" from freeway congestion points. Higher ratings were assigned to locations "upstream" from congestion, where express bus and car or vanpool car participants would benefit the most; areas "downstream" were rated lower.	●	●
Access to HOV Lanes and Ramps – Availability of HOV lanes between the site and major regional destinations, and the availability of HOV ramps at or near the site. The highest ratings were assigned to those sites with direct access ramps or other HOV improvements between the site and nearby freeways.		●
Cost – Planning level cost estimates for site development including land costs, leasing costs, development cost, operating and maintenance costs and other significant costs. Highest ratings were assigned to those sites where the total capital cost/stall is within 25% of the least expensive site within the target area.		●
Cost Effectiveness – A measure of cost effectiveness was calculated by dividing the cost estimate for each site by the demand estimated for the site. Sites with cost-effectiveness "scores" falling within the highest third of all sites analyzed received the highest ratings.		●
Jurisdictional Support – This is a fatal flaw criterion. Local jurisdictions were required to indicate before final programming their willingness to operate and maintain any lots identified for their jurisdiction, and to pay all operating, maintenance and matching capital costs.	●	●
Community Issues – Level of community concern related to the specific site. Sites that are not expected to have community opposition were rated higher than sites where community input indicates there may be some opposition.		●
Demand – Projected demand at the site in terms of the number of stalls required based on travel model projections. Sites with the highest demand within the target area received the highest ratings.	●	●

Project Recommendations

Park-and-Ride Lot Locations

The recommended sites listed in the table and shown on the map represent the regional park-and-ride lot system recommended for addition to the *MAG Long Range Transportation Plan*. The 20 recommended locations were identified, analyzed and ranked using an interactive agency and public involvement process. Ten sites are identified for implementation within the five-year timeframe of the *MAG Regional Transportation Improvement Program*. As funds allow, early land acquisition is recommended for those lots recommended for longer -term implementation. The recommended sites are identified for budgeting and programming purposes only. Final site selection will be made by local jurisdictions following environmental review and community input. Sites should be in or near the recommended target areas. Information on each of the sites is included in the *Task 5/6 Report: Site Evaluations.*

Implementation Process

As sites move toward implementation, the appropriate local jurisdiction(s) will begin environmental review and local community involvement processes. Once a site is confirmed by the local jurisdiction(s), land acquisition and final design will begin, followed by permitting and construction of the initial 250 spaces (Phase 1). The pre-design, design and construction of park-and-ride lots that impact the State Highway System require coordination with ADOT throughout the development process to ensure proper operations and safety. During this time the local jurisdiction(s) will work with the RTPA to fine tune the transit service plan for the lot. MAG, ADOT, RTPA and local jurisdictions should monitor the success of the park-and-ride facilities over time to determine the need/timing for future expansions (Phase 2), to identify needed adjustments in transit service, and to revise as needed the overall park-and-ride plan.

The areas proposed for long-term development typically are located in rapidly growing areas or in dense urban neighborhoods. In either case, available land is growing scarcer. Vacant parcels identified in this study are unlikely to remain vacant five to 15 years out. Advanced land acquisition would be beneficial in securing early ownership of such properties. Care must be taken, however, to undertake such purchases consistent with the requirements of NEPA to insure that federal funding options remain available for development of the site. Additional information on programming and implementation is included in the *Task 8 Report: Programming*. For both near- and long-term sites, joint use/development opportunities are encouraged.

Design Guidelines and Criteria

The major components of a park-and-ride lot (*Task 3 Report: Selection and Design Criteria)* include: passenger waiting and loading areas; passenger/pedestrian circulation areas; passenger information; climate mitigation elements (e.g. shade canopies); landscaping; telephones and drinking fountains; pedestrian area lighting; signage, bicycle storage and motorcycle parking; amenities for ADA parking; and rideshare parking. Jurisdictions should consider carefully the long-term maintenance costs of capital elements of park-and-ride projects. Components such as landscaping, shade canopies, and restrooms can have significant maintenance costs. Recommendations for joint use/development sites are also presented in this paper.

Management and Operations Program

Local jurisdictions should take active steps to ensure that adequate dollars are available to maintain the park-and-ride lot through its useful life. While appropriate design can reduce long-term maintenance costs, there is a core level of maintenance that is required on a regular basis. It also is recommended that jurisdictions work closely with the RPTA in developing an express bus service plan that provides frequent service over a several hour period in morning and evening peak periods to attract maximum ridership. To the extent possible, existing local routes in the vicinity of lots should be routed as close to the lots as possible to provide midday and evening options for park-and-ride lot users. Information on management and operations options and costs is included in the *Task 7 Report: Management and Operations Plan.*

Recommended Prioritization of Park-and-Ride Lot Locations

Near-Term

Priority	Target Area	Jurisdiction	Recommended Site (For Programming Purposes)	Capital Budget (Up to 250 Stalls)**	Capital Budget (To meet 2020 Demand)**
1*	30 – US 60 near Power Road	Mesa	30.1 – Superstition Springs Mall	$3,273,000	Capacity reached in Phase 1, second surface lot for budgeting purposes, $4,950,000, total of 800 stalls
2*	12/13 – Loop 101 near 67th Avenue	Glendale	13.2 – Loop 101 Frontage Road and 59th SE	$5,973,000	$4,950,000; total of 800 stalls
3	4 – I-10 near Elliott Road or 5 – I-10 near Chandler Boulevard	Phoenix	5.5 – 50th Street, 1/4 mile north of Chandler Boulevard	$4,243,000	$1,539,000; total of 421 stalls
4	29 – US 60 near Val Vista	Gilbert	29.4 – Page/Ash SW	$3,638,000	$2,250,000; total of 500 stalls, estimate
5	14/27 – SR 51 near Bell Road	Phoenix	14.3 – 36th and Bell SW	$5,133,000	$3,150,000; total of 600 stalls, maximum on site
6	15 – Loop 101 near Scottsdale Road, or 16 – Loop 101 near Shea Boulevard	Scottsdale	16.2 – Loop 101/Cactus NE	$5,048,000	$1,260,000; total of 390 stalls
7	11/32 – Loop 101 near Grand Avenue	Peoria	11.3 – 91st Avenue/Olive SW	$4,133,000	$1,728,000; total of 442 stalls
8*	7 – I-17 near Peoria Avenue	Phoenix	7.1 – (Decked Lot) Metrocenter	$3,153,000	$330,000; total of 283 stalls***
9	23/24 Loop 202 near Power/Gilbert	Mesa	23.6 – Gilbert/McDowell NE	$3,573,000	$1,647,000; total of 433 stalls
10	2 – I-10 near Litchfield	Avondale Goodyear	2.4 – I-10/Litchfield Road NW	$4,013,000	$1,071,000; total of 369 stalls
Sub-total				**$42,180,000**	**$22,875,000**

* Potential joint use development lot—An emphasis was placed on identifying potential locations of joint use or joint development lots. In these highlighted target areas, the preferred site provides such an opportunity. Potential joint use/joint development sites have been identified in other target areas and are included in the Task 5/6 Report: Site Evaluations.

** Cost estimates are in Year 2000 dollars and are subject to revisions during the pre-design and design processes. Costs include: land acquisition, design and construction.

*** May be built as part of Phase 1.

Footnotes: • Near-term: expected to be scheduled or programmed for construction over the next five years.
• Long-term: beyond the current program but in the 20-year timeframe of the regional Long Range Transportation Plan.

Recommended Prioritization of Park-and-Ride Lot Locations

Long-Term

Priority	Target Area	Jurisdiction	Recommended Site (For Programming Purposes)	Capital Budget (Up to 250 Stalls)**	Capital Budget (To meet 2020 Demand)**
11	18 – Loop 101 in Tempe	Tempe	18.1 – Loop 101/ Apache/Broadway	$3,218,000	$1,368,000; total of 402 stalls
12	4 – I-10 near Elliott Road, or 5 – I-10 near Chandler Boulevard	Phoenix	4.3 – Warner Road/I-10 SE	$4,193,000	$1,143,000; total of 377 stalls
13	15 – Loop 101 , near Scottsdale Road or 16 – Loop 101 near Shea Boulevard	Scottsdale	15.2 – Loop 101/Scottsdale NW	$4,903,000	$2,250,000; total of 500 stalls
14	28 – US 60 near Country Club Road	Mesa	28.3 – Mesa Drive/Javelina NE/SE	$4,013,000	$3,150,000; total of 600 stalls
15	20/21 – Loop 202 near Arizona Avenue/ Val Vista	Chandler	20.5 – Frye/Price Frontage Road	$3,543,000	$1,332,000; total of 398 stalls
16	10 – Loop 101 near Camelback	Phoenix, Glendale	10.3 – Loop 101/Camelback SW	$3,698,000	$2,295,000; total of 505 stalls
17	8 – 1-17 near Deer Valley Road	Phoenix	8.1 – Happy Valley Road/I-17 SW	$4,043,000	$2,565,000; total of 535 stalls
18	22 – Loop 202 near Power Road	Gilbert	22.5 – Val Vista/Germann NW	$3,348,000	$0; demand less than 250 stalls, to be reevaluated as demand warrants
19	31 – Grand Avenue near Litchfield	Surprise	31.4 – Bell Road/Dysart SW	$3,543,000	$0; demand less than 250 stalls, to be reevaluated as demand warrants
20	32 – Grand Avenue near 67th Avenue	Glendale	11.6 – Myrtle/59th Avenue SW	$3,263,000	$2,700,000; total of 613 spaces (including 70 existing spaces)
Sub-total				**$37,765,000**	**$16,803,000**
Total				**$79,945,000**	**$39,678,000**

** Cost estimates are in Year 2000 dollars and are subject to revisions during pre-design and design processes.

Footnotes:
- Prior to construction of the ultimate facilities, demand estimates should be revisited.
- The final programming will differ depending on sponsorship commitments, updated cost estimates, and local jurisdiction funding that allows for advance design and construction in some cases. Costs include land acquisition (where applicable), design including necessary environmental document preparation, and construction.
- Exact lot locations may change following the consideration of alternative sites in the detailed environmental analysis required for each lot. The final location for each lot should, however, be within the same target area that contained the original recommended lot.
- Additional lots may be added to the regional system in the future as needs are identified and funding becomes available.

KJS Associates, Inc.